



Integrated Program Strategy For Reducing the Adverse Impacts of Emerald Ash Borer Throughout the Northeastern Area

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USDA FOREST SERVICE, Northeastern Area State and Private Forestry - Forest Health and Economics
Integrated Program Strategy for Reducing the Adverse Impacts of Emerald Ash Borer Throughout NA

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CF Cooperative Forestry
FHP Forest Health Protection
STE Stewardship
UCF Urban and Community Forestry
WERC Wood Education and resource Center

Photographs:

Emerald ash borer: Pennsylvania Department of Conservation and Natural resources – Forestry Archive,
Bugwood.org

Trees: Troy Kimote, Canadian Food Inspection Agency, Bugwood.org

Executive Summary:

Northeastern Area State and Private Forestry (NAS&PF) developed a roadmap to improve program integration activities that focus on reducing the adverse impacts of emerald ash borer (EAB). It is responsive to the Northeastern Area's current strategic plan and business plan priorities. This integrated plan specifically identifies 5 objectives and 11 strategies. The strategy includes continuation of some current program strategies and introduces some new program strategies.

The top five priorities as identified by the NA Executive Team are:

1. Prevent the spread of EAB and prepare for EAB outbreaks and infestations by helping State and local governments, homeowners, forest landowners, Federal partners, and tribal governments prepare for EAB and its adverse effects (**Objective 1, Strategy 2**).
2. Manage EAB infestations that will not be eradicated by developing effective management tools and strategies (**Objective 3, Strategy 1**).
3. Manage EAB infestations that will not be eradicated by reducing EAB-induced impacts in high-value areas and unique ecosystems (**Objective 3, Strategy 3**).
4. Rehabilitate and restore forest ecosystems altered by the loss of ash trees by promoting and restoring healthy, sustainable urban and rural forests and unique ecosystems affected by EAB (**Objective 5, Strategy 2**).
5. Prevent the spread of EAB and prepare for EAB outbreaks and infestations by minimizing artificial movement of EAB to non-infested areas (**Objective 1, Strategy 1**).

Purpose:

This strategy was prepared to help guide the development and implementation of EAB priorities and actions within the Northeastern Area regarding the threats and harm caused by the EAB. It is responsive to Goal 1, Objective 1.C in the current Northeastern Area Strategic Plan. It also highlights how State and Private Forestry programs can contribute to an integrated response to EAB impacts on the landscape.

It should be noted this is a programmatic strategy, not a budget or investment strategy. While each of the objectives and associated strategies is deemed to be appropriate in its own right, the limits of available funding and other resources to implement the strategies are to be reconciled through accepted Northeastern Area State and Private Forestry business and decisionmaking processes.

Desired Outcomes:

1. **PREVENTION:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private individuals are fully aware of the risks associated with EAB and other invasive pests and understand steps required to prevent human-assisted, long-distance transport of EAB and other pests.
2. **PREPAREDNESS:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private individuals are aware and have prepared for the potential detrimental effects of EAB and are able to respond to an infestation should one occur.
3. **MANAGE/MITIGATE IMPACTS OF EAB:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private landowners and individuals have the tools and resources available, either directly, or through awareness of available contracted services, to respond to an EAB infestation.
4. **SUPPRESS EAB POPULATIONS:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private landowners have options to reduce EAB populations or slow the EAB invasion process.
5. **UTILIZE/SALVAGE REMOVED WOOD:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private landowners have options for marketing and utilizing salvaged or harvested ash trees, other than landfill/disposal.
6. **PRESERVE ECOSYSTEM FUNCTIONS:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private landowners are fully aware of the economic, social, and ecological benefits and services that healthy and productive forests provide. Long-term management of forests along the urban-rural gradient is focused on conserving and enhancing these functions with or without ash trees.
7. **REPLANT AND REFOREST:** State, local, and Federal governmental officials; community, business, and tribal leaders; and private landowners are enabled to replace trees that have been removed due to EAB infestation.
8. **DEMONSTRATED SUCCESS:** NAS&PF as well as State and local government officials; community, business, and tribal leaders; and private landowners are able to demonstrate success of the NAS&PF EAB Strategy through measurable and timely achievements, which are shared among partners.

Key Messages:

- Emerald ash borer is the most destructive forest insect introduced into North America in recent history.
- Our present ability to detect, contain, eradicate, or manage EAB infestations is limited. The eventual loss of the vast majority of ash trees in North America should be anticipated.
- EAB infestations are distributed across a much greater geographical region than originally hoped, and the more we look, the more we find. Most of these infestations have been caused by people moving infested ash wood (logs, firewood) and commodities such as nursery stock from place to place.
- The Forest Service is evaluating tactics to slow the EAB invasion process and delay the onset and spread of ash mortality.

Background Information:

The emerald ash borer (EAB) is an exotic wood-boring beetle from Asia that has killed more than 50 million ash trees, causing extensive environmental and economic damage throughout infested areas in the Northeastern United States and Canada. This insect was probably introduced into North America sometime in the 1990s. It was first reported killing ash (genus *Fraxinus*) trees in the Detroit and Windsor (Ontario) areas in 2002. Since then, infestations have been found throughout Michigan; across much of Ohio; and in parts of Indiana, Illinois, Maryland, Missouri, Pennsylvania, Virginia, West Virginia, and Wisconsin. As of July 2009 new infestations have been confirmed in Kentucky, Minnesota, and New York. Infestations have also been found in more areas of Ontario and in the province of Quebec. The insect is likely to be found in additional areas as detection surveys continue. Due to our poor survey and detection tools, EAB is generally established in an area for several years before it is detected.

The broad distribution of this pest in the United States and Canada is largely due to individuals and businesses inadvertently transporting infested ash nursery stock, unprocessed logs, firewood, and other ash commodities. Federal and State quarantines in infested States now regulate transport of these products. Besides regulated quarantine actions, ash tree removal and, to a lesser extent, forest management schemes, have been developed and implemented, including aggressive detection and monitoring programs. These efforts, as well as complementary actions regarding information and technology transfer activities, are documented and available to the public in many Web sites. One main portal Web site that links to many others is <http://www.emeraldashborer.info>.

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Vision:

Northeastern Area State and Private Forestry, in cooperation with a variety of partners, is recognized and respected as the premier Federal agency that has a fully integrated response to effectively address the threat posed by EAB.

Mission:

Northeastern Area State and Private Forestry provides leadership and assistance that supports sustainable forest management and use across the landscape and provides multiple benefits for the people of the 20 Northeastern and Midwestern States and the District of Columbia by addressing emerald ash borer threats to our forests.

Goal:

To maintain the health and vitality of forest ecosystems along the urban-to-rural gradient at risk from emerald ash borer (Objective 1.C, Northeastern Area State and Private Forestry Strategic Plan Update for Fiscal Years 2008 – 2012).

Objectives & Strategies:

Objective 1: Prevent the spread of EAB and prepare for EAB outbreaks and infestations.

EAB is not yet present in most communities and landscapes across the United States. Therefore, the most effective strategy against EAB is to prevent its introduction and establishment into uninfested areas. Preventive measures typically offer a cost-effective means to delay environmental and economic impacts, allowing more time for additional input from research and methods development that may provide new tools for managing EAB. Prevention will rely on a diverse set of tools and methods, including education, communications, and outreach. In addition, a number of management activities can be initiated well before EAB arrives in an area that can mitigate the eventual impact of this insect and help to maintain the integrity of local forest ecosystems, including urban and community forests and unique areas such as black ash wetland forests.

Strategy 1: Minimize artificial movement of EAB to noninfested areas.

Focus Areas

1. Coordinate with plant pest regulatory agencies and other partners to engage a wide variety of audiences about the likelihood of moving EAB, including a coordinated firewood information campaign that informs people of the risks associated with moving firewood (UCF, FHP, STE, WERC).
2. Coordinate with plant pest regulatory agencies and other partners to engage arborists, forest products businesses, and other industrial users of potentially EAB-infested wood about minimizing EAB spread with an emphasis on developing cost-effective phytosanitation methods and proper disposal techniques.

Strategy 2: Help State and local governments, homeowners, forest landowners, Federal partners, and tribal governments prepare for EAB and its adverse effects.

Focus Areas

1. Develop management guidelines for local, State, and Federal governmental officials; community, business, and tribal leaders; and private landowners and individuals. Guidelines should include sections on (STE, WERC):
 - Managing forest stands with no current infestation
 - Managing forest stands in the initial infestation phase
 - Managing forest stands without ash as a component
 - Markets and utilization options for harvested trees
2. Assist partners in developing preparedness and mitigation plans that provide guidance on diversifying urban and community forest canopies, improving local tree resources, and addressing the potential adverse impacts of EAB on unique ecosystems or resources such as black ash used for basket making (UCF, FHP, STE).
3. Assist partners with consistent inventory, and data collection and analysis techniques for urban and community tree resources in order to determine high-risk communities and tree resources (UCF, FHP).

Objective 2: Detect, monitor, and respond to new EAB infestations.

Early detection and rapid response, sometimes considered the “second line of defense” after prevention, are important steps in finding and addressing new pest introductions. Early detection of new infestations requires vigilance and regular monitoring of uninfested areas where the risk of EAB introduction or spread is high. The Forest Service has a role in coordinating with other agencies and groups to develop and implement early detection surveys for EAB. When EAB spots are detected in new areas, a prompt, multiagency, coordinated response generally follows to examine the situation, establish regulatory procedures and quarantines, and determine if any further direct intervention to contain or eradicate is feasible. This rapid response is led by USDA APHIS and the State plant pest regulatory agencies, with the Forest Service and State natural resource agencies providing technical and scientific support where requested or needed. If eradication of new infestations is attempted, it is in the best interest of the Forest Service and State foresters to support these efforts.

Strategy 1: Promote detection of EAB in noninfested areas.

Focus Areas

1. Develop, evaluate, refine, and transfer new and/or existing survey and detection tools (FHP).
 - Identify and use effective early detection techniques and surveys by reaching out to various publics through outreach activities and “first detectors” (FHP).
 - Increase capacity to monitor urban and community tree health to promote earlier detection of new EAB infestations (FHP, UCF).
2. Develop, evaluate, refine, and transfer risk models to help partners determine where to best invest survey and detection resources (FHP).

Strategy 2: Respond to new infestations (emergency response).

Focus Areas

1. Provide technical and science-based support to Federal and State plant pest regulatory agencies to respond to new EAB infestations (FHP, UCF).
2. Provide technical and science-based support to communities, landowners, and other partners through the development and dispersal of EAB informational products such as pest alerts, ID cards, firewood posters, and brochures, among others, to all cooperators (FHP).
3. Provide replanting assistance to communities. Assistance may include (UCF, FHP):
 - Technical information
 - Limited direct financial assistance
 - Indirect financial assistance by working with partners to explore, develop, and implement revolving loan fund mechanisms for tree replacement activities after EAB removals
4. Working with NAASF and State Foresters, the Forest Service’s Washington Office, and other partners, develop a protocol for technical and financial assistance options for forest landowners negatively affected by EAB infestations using new authorities in the 2008 Farm Bill, Title VIII Forestry, Section IV. Forest Health and Disaster Recovery, A. Emergency Forest Restoration.

Objective 3: Manage EAB infestations that will not be eradicated.

When it is recognized that EAB is established in a forest location, a strategic approach for management is needed to minimize impacts, maintain forest and landscape integrity, and reduce the likelihood of spread to other locations. Effective management relies on a clear understanding of EAB including its biology, the ecosystems it has infested, and the various management tools and options. Proven tools exist to reduce EAB populations in individual trees or to protect individual high-value trees, at least for a short period of time. However, there is still a great deal to learn about managing EAB populations at the landscape level. We are beginning to develop tools and tactics, such as those utilized in the Slowing Ash Mortality pilot project (SLAM) that might be used to slow the rate and extent at which tree mortality occurs in many locations.

Strategy 1: Develop effective management tools and strategies.

Focus Areas

1. Develop, evaluate, refine, and transfer tools and tactics for management of EAB including (FHP):
 - Promising new insecticides and application techniques (FHP)
 - Biological control options (FHP)
 - Management strategies such as those used in SLAM (FHP)
2. Provide direction and guidance to communities and landowners about including EAB management options in urban forest management plans (UCF).

Strategy 2: Use effective management tools and strategies with an emphasis on slowing the invasion process where the insect has been recently introduced.

Focus Area

1. Implementation of management tools and tactics including:
 - Promising new insecticides and application techniques (FHP)
 - Biological control options (FHP)
 - Management strategies such as those used SLAM (FHP)

Strategy 3: Reduce EAB-induced impacts in high-value areas and unique ecosystems.

Focus Area

1. Develop and implement management strategies for high-value areas and unique ecosystems that include the following (STE, FHP, UCF, WERC):
 - Identify high-value areas and unique ecosystems most susceptible to EAB-induced impacts
 - Determine and evaluate realistic management options that could positively affect these areas/ecosystems
 - Work with partners to implement management activities in the selected areas/ecosystems

Management recommendations and activities could include:

 - Protecting high-value ash trees that are at immediate risk of EAB infestations
 - Biological control options
 - Silvicultural guidelines
 - Best management practices
 - Phloem-reduction guidelines
 - Tree removals

Objective 4: Economic utilization of live ash trees (both EAB infested and uninfested) and ash trees recently killed by EAB.

Removal and utilization of ash trees, either before or after an infestation, may help slow the spread of EAB and reduce EAB populations. At the same time, the harvested trees provide a usable wood resource that can be turned into valuable products such as baseball bats, baskets, furniture, kitchen cabinets, pallets, containers, and packaging materials or used as a fuel source for heat or electrical generation.

Strategy 1: Foster interaction and information exchange with the forest products and arboricultural industries to enhance opportunities for sustained utilization of ash.

Focus Areas

1. Facilitate the focused utilization of ash wood and fiber by (WERC):
 - Exploring opportunities for ash biomass by using NAS&PF's Woody Biomass Plan resources to assist in developing energy markets for EAB wood and other urban wood wastes (WERC)
 - Assisting start-up and existing sawmills and related businesses that use ash as a major component of their business operations in maintaining and/or improving their economic health
2. Provide technical assistance regarding utilization and marketing options including (WERC):
 - Educational and outreach efforts to nongovernmental organizations, States, and others to inform key urban and community stakeholders about opportunities and processes to access ash markets
 - Continued work with local partners in Michigan, Illinois, Ohio, and surrounding States in the development of processes for improving the utilization and marketing of EAB-infected wood (WERC)

Objective 5: Rehabilitate and restore forest ecosystems altered by the loss of ash trees.

EAB is likely to eliminate a large proportion of the ash resource in North America. Communities, homeowners, and forest landowners and managers will need information, guidelines, and assistance to rehabilitate and restore affected rural and urban forests. In addition, opportunities to restore ash as a viable tree component will be evaluated and encouraged.

Strategy 1: Conserve ash germplasm and promote the development of resistant ash.

Focus Areas

1. Develop, evaluate, and refine information, tools, and technologies that will help conserve and preserve ash as a viable species in North America (STE).
2. Promote a coordinated ash seed collection strategy with Federal and State agencies, tribes, and others with a goal of preserving an adequate amount of genetic variation to meet the long-term goal of returning ash species to their native ecosystems (CF, FHP).

Strategy 2: Promote and restore healthy, sustainable urban and rural forests and unique ecosystems affected by EAB.

Focus Areas

1. Support replanting and sustaining urban and community forests by (UCF, FHP):
 - Developing a standard set of guidelines to be used for reforestation projects
 - Supporting and providing technical assistance to States to increase the extent and health of urban and community forests
 - Encouraging and facilitating the inclusion of reforestation elements after EAB incidents in State and local urban forest management plans
2. Working with NAASF and State Foresters, the Forest Service's Washington Office, and other partners, develop protocols for technical and financial assistance options for forest landowners and communities negatively affected by EAB infestations using all applicable authorities, including new authorities in the 2008 Farm Bill (FHP, STE, UCF, WERC):
 - Title VIII. Subtitle C. Sec. 8203: Emergency Forest Restoration Program
 - Title VIII. Subtitle A. Sec. 8003: Community Forest and Open Space Conservation Program – ensure community forest plans address potential EAB infestations and related invasive species
 - Title X. Subtitle B. Sec. 10205. Pest and Disease Revolving Loan Fund
 - Other Sections as appropriate

Strategy 3: Mitigate the danger from hazardous trees in places frequented by people.

Focus Areas

1. Promote training and share information on hazard tree identification and management (FHP, UCF).
2. Support removal and remediation of dead and dying ash trees by (UCF):
 - Developing a standard set of guidelines for removal projects
 - Providing technical and financial assistance to States in order to ease the burden of ash removal
 - Exploring creative options to leverage non-Forest Service funds to assist in removal and remediation costs
3. Encourage and facilitate the inclusion of elements related to EAB management in local urban and community forest management plans (UCF, STE).

Legislative Authority for S&PF Programs that could assist with implementation of the strategy:

(Source: Catalog of Federal Domestic Assistance Web site)

Cooperative Forestry Assistance (10.664)

Cooperative Forestry Assistance Act of 1978, Public Law 95-313; Food, Agriculture, Conservation, and Trade Act of 1990, as amended, Public Law 101-624.

With respect to non-Federal forest and other rural lands to assist in the advancement of forest resources management; the encouragement of the products of timber; the control of insects and diseases affecting trees and forests; the control of rural fires; the efficient utilization of wood and wood residues, including the recycling of wood fiber; the improvement and maintenance of fish and wildlife habitat; and the planning and conduct of urban and community forestry programs.

Urban and Community Forestry Program (10.675)

Cooperative Forestry Assistance Act of 1978, Title 16, Part 2105, Section 9, Public Law 95-313, 92 Stat. 365, as amended by Cooperative Forestry Assistance Act, Public Law 107-195.

To plan for, establish, manage, protect, and utilize wood from trees, forests, green spaces, and related resources in and adjacent to cities and towns to improve urban livability; to link governmental, private, and grassroots organizations and resources to address environmental issues at the local, regional, and national level; to engage people in citizen-based, grassroots volunteer efforts to assist in retaining and protecting their natural environment to provide a balance between quality of life and land consumption associated with urban sprawl; and to improve the ecological function, and social and economic stability of cities and communities.

Stewardship Program (10.678)

Cooperative Forestry Assistance Act of 1978, Public Law 95-313; Food, Agriculture, Conservation, and Trade Act of 1990, as amended, Public Law 107-171.

To promote and enable the long-term active management of non-industrial private and other non-Federal forest land to sustain the multiple values and uses that depend on such lands.

Forest Health Protection (10.680)

Cooperative Forestry Assistance Act of 1978, Public Law 95-313; Food, Agriculture, Conservation, and Trade Act of 1990, as amended, Public Law 101-624; Consolidated Appropriations Resolution FY 2003, Public Law 108-7, Division F, Title II; subsequent appropriation Acts, Public Law 108-108.

Protect non-Federal forest and tree resources from damaging forest insects, disease-causing agents, and invasive plants; develop/improve forest health protection technologies; and monitor the health of our Nation's forests.

Wood Education and Resource Center (WERC) (10.681)

Public Law 105-277, Div. A, Section 101(e) Title III, Section 343, 112 Stat. 2681-231, 2681-297; Cooperative Forestry Assistance Act of 1978, as amended, 16 U.S.C. 2101 et. seq.; Forest and Rangeland Renewable Resources Act of 1978, as amended, 6 U.S.C. 1600-1614.

To provide funds, on a cost-share basis, for projects that focus on enhancing opportunities for sustained forest products production for primary and secondary hardwood industries located in the eastern hardwood forest region. In order to maintain and improve the health and stewardship of our eastern hardwood forests, local wood-using industries need to be vibrant and able to utilize a wide variety of resources from the forest. Priorities include: Maintain the economic competitiveness of hardwood industries. Bring information and technology to existing and emerging businesses involved in the development and manufacturing of wood products. Bring marketing and business-related skills to existing and emerging wood products businesses. Encourage the adoption of new technology to improve competitiveness and profitability. Provide support and key information to entrepreneurs and start-up businesses. Address global issues and assist communities and industries facing threats from invasive species, such as the emerald ash borer. Increase the use of woody biomass for domestic energy use. In addition, the primary mission of WERC is to foster interaction and information exchange with the forest products industry to enhance opportunities for sustained forest products production in the eastern hardwood forest region of the United States.